NOVEMBER/DECEMBER 2024

23PCS11 — ANALYSIS AND DESIGN OF ALGORITHMS

Time : Three hours Maximum : 75 marks

Shanmuga Industries Arts & Science College
T.V.Malai

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define algorithm.
2. Define tree.
3. Define divide and conquer.
4. State the principle of quick sort.
5. Define greedy method.
6. Define Knapsack problem.
7. What is dynamic programming?
8. Write any two problems that can be solved using dynamic programming.
9. Define sum of subsets.
10. Define the branch and bound method.

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Explain the performance analysis of an algorithm.

Or

(b) Define stack. Explain the operations on stack.

12. (a) Explain the post-order traversal of a tree.

Or

(b) Write the algorithm for Breadth First Search.

13. (a) Explain Kruskal's algorithm.

Or

(b) Explain the Greedy algorithm with an example.

14. (a) Explain all-pairs shortest path problem with an example.

Or

(b) Explain the travelling salesperson problem with an example.

15. (a) Explain the backtracking method with an example.

Or

(b) Solve the graph colouring problems using backtracking approach.

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SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss heap sort with an example.

17. Explain merge sort algorithms using divide and conquer approach.

18. Discuss Dijkstra's algorithm.

19. What is a multistage graph? Discuss with an example.

20. Discuss the algorithm to solve the 8-queens problem.

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